

**In the Claims:**

1. (Currently Amended) A high-speed digital enhancement method for gray-scale images, comprising:

- a. computing a normalized light dynamic range compressed image;
- b. computing a normalized dark dynamic range compressed image; and
- c. computing a balanced dynamic range compressed image, using said normalized light and dark dynamic range compressed images;

wherein said step of computing a normalized light dynamic range compression image further includes computing a light dynamic range compressed image as

$$I_{pos}(i, j) = \frac{N(i, j)}{K + \{W * N\}(i, j)}$$

wherein  $I_{pos}(i, j)$  represents said light dynamic range compressed image,  $N(i, j)$  represents one of the gray-scale images,  $K$  is a positive scalar variable,  $W$  is an averaging kernel and  $*$  represents convolution.

2-5. (Canceled)

6. (Original) The method of claim 1, where the computation of said light and dark normalized dynamic range compressed images includes using look-up tables.

7. (Original) A method for dynamic range compression and color reconstruction of a color image, the image having a plurality of original colors and a single original norm, the method comprising:

- a. obtaining a balanced dynamic range compressed norm of the image;

b. dividing said balanced dynamic range compressed norm by the original norm; and

c. reconstructing each color by multiplying each original color by a quotient of said balanced dynamic range compressed norm divided by the original norm.

8. (Canceled)

9. (Original) The method of claim 7, wherein said step of reconstructing includes using a two dimensional lookup table (LUT) of  $\frac{I_{bal}(i,j)}{N(i,j)}$ .

10. (Original) The method of claim 7, wherein said step of reconstructing includes using a uni-dimensional lookup table (LUT) of  $\frac{1}{N(i,j)}$ .

11-12. (Canceled)

13. (Original) A method of enhancing an input image, comprising the steps of:

(a) computing a norm  $N$  of each pixel of the input image; and

(b) computing a light dynamic range compressed image, each pixel whereof is

$$I_{pos} = \frac{N}{K + W * \{N\}}$$

wherein  $K$  is a positive scalar variable,  $W$  is an averaging kernel,  $\{N\}$  is a matrix of said norms in a neighborhood of said each pixel and  $*$  represents convolution.

14. (Original) The method of claim 13, wherein said light dynamic range compressed image is computed using a lookup table for  $\frac{1}{K + W * \{N\}}$ .

15. (Original) The method of claim 13, wherein said light dynamic range compressed image is computed using a lookup table for  $\frac{N}{K + W * \{N\}}$ .

16. (Currently Amended) The method of claim 13, further comprising the step of:

- (c) computing a dark dynamic range compressed image, each pixel whereof is

$$I_{neg} = 1 - \frac{FS - N}{K + W * \{FS - N\}}$$

wherein  $FS$  is a full-scale dynamic range matrix,  $K$  is a positive scalar variable,  $W$  is an averaging kernel,  $\{FS - N\}$  is a matrix of a difference between  $FS$  and said norms in a neighborhood of said each pixel, and  $*$  represents convolution.

17. (Original) The method of claim 16, further comprising the steps of:

- (d) normalizing and truncating said light dynamic range compressed image, thereby producing a normalized light dynamic range compressed image; and

- (e) normalizing and truncating said dark dynamic range compressed image, thereby producing a normalized dark dynamic range compressed image.

18. (Original) The method of claim 17, further comprising the step of:

- (f) combining said normalized light dynamic range compressed image and said normalized dark dynamic range compressed image to produce a balanced dynamic range compressed image.

19. (New) A high-speed digital enhancement method for gray-scale images, comprising:

- a. computing a normalized light dynamic range compressed image;
- b. computing a normalized dark dynamic range compressed image; and
- c. computing a balanced dynamic range compressed image, using said normalized light and dark dynamic range compressed images;

wherein said step of computing a normalized dark dynamic range compressed image further includes computing a dark dynamic range compressed image as

$$I_{neg}(i, j) = 1 - \frac{FS - N(i, j)}{K + \{W * (FS - N)\}(i, j)}$$

wherein  $I_{neg}(i, j)$  represents said dark dynamic range compressed image,  $N(i, j)$  represents one of the gray-scale images,  $FS$  is a matrix, identical in dimension to  $N$ , that represents a dynamic range of said one gray-scale image;  $K$  is a positive scalar variable,  $W$  is an averaging kernel and  $*$  represents convolution.